

CLAIMS

1. System for packaging products with immobilization by means of a shrink film covering all the products  
5 (12) arranged inside a cardboard box (1) and, after its shrinking, holding these products (12) against one another and also against the base (2) of the box (1), the packaging system using cardboard boxes (1) comprising a base (2) and a lateral band (3) in  
10 cardboard and sheets (9, 10) in heat-shrinkable material attached, via one of their edges, in the region of the join between the base (2) of the box (1) and at least two sides (4) of the lateral band (3) of this box (1), characterized in that, in addition to the  
15 sheets (9, 10) in heat-shrinkable material attached to the region of the join between the base (2) of the box (1) and the lateral band (3) of this box (1), provision is made for an additional heat-shrinkable sheet (14) brought to the level of the upper part of the lateral  
20 band (3) or of the products (12) and connected by means of welding to the previous heat-shrinkable sheets (9, 10) in order to form a single film that is shrunk over the products (12) arranged inside the box (1), in order to immobilize them.

25  
2. Packaging system according to Claim 1, characterized in that the additional heat-shrinkable sheet (14) has a rectangular shape corresponding to the horizontal section of the cardboard box (1).

30  
3. Packaging system according to Claim 2, characterized in that, in the case of a cardboard box (1) provided with two heat-shrinkable sheets (9, 10) attached, respectively, in the region of the join  
35 between the base (2) of the box (1) and two opposing faces (4) of the lateral band (3) of this box (1), the additional heat-shrinkable sheet (14) is welded to the first two heat-shrinkable sheets (9, 10) along two parallel lines so as to form, by means of the joining

of the three sheets (9, 10, 14), a continuous heat-shrinkable strip.

4. Packaging system according to Claim 3,  
5 characterized in that, insofar as the three sheets (9, 10, 14) consist of uniaxially oriented heat-shrinkable plastic, the orientation directions of these three sheets (9, 10, 14) are coordinated, in particular in the transverse direction of the box (1).
- 10
5. Packaging system according to any one of Claims 1 to 4, characterized in that the additional heat-shrinkable sheet (14) is joined to the first heat-shrinkable sheets (9, 10) by continuous welding lines  
15 so as to form a continuous-surface single film.
6. Packaging system according to any one of Claims 1 to 4, characterized in that the additional heat-shrinkable sheet (14) is joined to the first heat-shrinkable sheets (9, 10) by discontinuous welding  
20 lines forming, after shrinkage of the film, lines of least resistance.
7. Packaging system according to any one of Claims 1 to 6, characterized in that a heat-protection sheet (13) particularly made of paper, is inserted between the assembly of products (12) arranged inside the box (1) on the one hand and the continuous film formed by the joining of the heat-shrinkable sheets (9, 10, 14)  
30 on the other.
8. Packaging system according to both of Claims 2 and 7, characterized in that the heat-protection sheet (13) has a rectangular shape corresponding to the horizontal  
35 section of the cardboard box (1) and to the surface of the additional heat-shrinkable sheet (14).
9. Packaging system according to any one of Claims 1 to 8, characterized in that the additional heat-

shrinkable sheet (14) is of a nature and/or thickness and/or color different than those of the first heat-shrinkable sheets (9, 10).

5 10. Method for forming packaging for products with immobilization by means of a shrink film according to any one of Claims 1 to 9, characterized in that, starting from a preformed cardboard box (1), in succession:

10 - the initially free parts of heat-shrinkable sheets (9, 10) connected to the join between the base (2) of the box (1) and the lateral band (3) of this box (1) are folded over the upper edge of faces (4) of the cardboard lateral band (7) of the box (1) that is still  
15 without its cover (6);

- the products (12) to be packaged inside the box (1) are inserted;

- the additional heat-shrinkable sheet (14) is placed over the box (1) or into the latter;

20 - the additional heat-shrinkable sheet (14) is welded to the first heat-shrinkable sheets (9, 10), at the level of the upper part of the corresponding faces (4) of the lateral band (3) or over the products (12) arranged inside the box (1), so as to form a single  
25 continuous film; and

- this film is shrunk, by means of heating, so as to tighten it over all the products (12) arranged inside the box (1).

30 11. Method according to Claim 10, characterized in that the operations of welding the additional heat-shrinkable sheet (14) to the first heat-shrinkable sheets (9, 10) and of shrinking the film resulting from the joining of these sheets (9, 10, 14) are carried out  
35 simultaneously.

12. Method according to Claim 10 or 11, characterized in that, if a heat-protection sheet (13) has to be inserted it is placed inside the box (1) after

insertion of the products (12) to be packaged and before insertion of the additional heat-shrinkable sheet (14).

5 13. Method according to either of Claims 10 and 12, characterized in that the parts (9a, 10a) of the first heat-shrinkable sheets (9, 10) folded over against the outside of the corresponding faces (4) of the lateral band (3) of the box (1) are held temporarily (at 11)  
10 against the outside of these faces (4) by means of adhesive bonding or by pinching, at least during the step of inserting the products (12) to be packaged.

14. Method according to Claim 13, characterized in  
15 that the folded-over parts (9a, 10a) of the first heat-shrinkable sheets (9, 10) are held temporarily against the outside of the corresponding faces (4) of the lateral band (3) by means of adhesive dots (11) produced with a viscous adhesive.

20 15. Method according to Claim 13, characterized in that the folded-over parts (9a, 10a) of the first heat-shrinkable sheets (9, 10) are held temporarily against the outside of the corresponding faces (4) of the  
25 lateral band (3) by pinching points resulting from slits, notches or impressions produced in the upper zone of the faces (4) of the lateral band (3).

16. Method according to any one of Claims 10 to 15,  
30 characterized in that the additional heat-shrinkable sheet (14) is supplied by unwinding from a reel (22) of heat-shrinkable film and by cutting this film above a location receiving the box (1), in particular above a conveyor (17).

35 17. Method according to Claim 16, characterized in that the unwinding and cutting of the film stored on the reel (22) take place at a work station that also

carries out welding of the additional heat-shrinkable sheet (14) to the first heat-shrinkable sheets (9, 10).

18. Method according to both Claims 12 and 16,  
5 characterized in that in the case of the use of a heat-protection sheet (13), this sheet (13) is supplied by unwinding from a reel (18) of protective strip and by cutting this strip above a location receiving the box (1), in particular above the conveyor (17).